

WHAT IS CLAIMED IS:

1. A stent coating apparatus, comprising:

a solvent pump that pumps a solvent from a solvent reservoir;

a polymer pump that pumps a polymer from a polymer reservoir;

5 an atomizer that atomizes the solvent and polymer; and

a nozzle assembly having

a polymer feed conduit, in fluid communication with the polymer
reservoir, that dispenses the polymer,

a solvent feed conduit, in fluid communication with the solvent reservoir,
10 that is not in fluid communication with the polymer feed conduit and dispenses
the solvent, the solvent mixes with the polymer when the polymer and solvent are
dispensed out from the nozzle assembly, and

an atomizing air conduit, in communication with the atomizer, that is not
in fluid communication with the polymer feed conduit and the solvent feed
15 conduit and that uses atomizer air from the atomizer to atomize the solvent and
polymer that are dispensed out from the nozzle assembly.

2. The apparatus of claim 1, further comprising a stent mandrel fixture capable of
securely supporting a stent during a coating process.

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3. The apparatus of claim 2, wherein the stent mandrel-fixture is further capable of
rotating or translating the stent during a coating process.

4. The apparatus of claim 1, wherein the nozzle assembly enables external atomization of the solvent and polymer.

5. The apparatus of claim 1, wherein the polymer feed conduit is positioned within the solvent feed conduit such that the solvent feed conduit circumscribes the polymer feed conduit.

6. The apparatus of claim 1, wherein the polymer reservoir holds a polymer and drug mixture.

7. The apparatus of claim 6, wherein the solvent of the solvent reservoir is a better solvent for the polymer than for the drug.

8. The apparatus of claim 1, wherein an outlet section of the atomizing air conduit is angled relative to the polymer and solvent feed conduits.

9. The apparatus of claim 1, wherein the solvent or polymer feed conduit extends out from the atomizing air conduit.

10. The apparatus of claim 1, wherein the polymer feed conduit is recessed with respect to the solvent feed conduit.

11. A nozzle assembly to dispense a solvent and polymer onto a stent, comprising:

a first tube to deliver a polymer composition to a stent;

a second tube disposed over the first tube to dispose a solvent completely or significantly free from drugs or polymer, such that the solvent is adapted to blend or mix with the composition when the composition and the solvent are discharged out from the nozzle; and

a third tube disposed over the second tube to atomize by air the composition and solvent that is applied to the stent.

12. The nozzle assembly of claim 11, wherein the nozzle assembly enables external atomization and mixing of the solvent and polymer.

13. The nozzle assembly of claim 11, wherein the polymer composition includes a drug.

14. The nozzle assembly of claim 11, wherein an end of the third tube is bent towards the second tube.

15. The nozzle assembly of claim 11, wherein the first or second tube protrudes out from the third tube.

16. The nozzle assembly of claim 11, wherein the first tube is recessed within the second tube.

17. The nozzle assembly of claim 11, wherein the tubes are made of or coated with a non-stick material.

18. The nozzle assembly of claim 11, wherein the tubes have arcuate ends.

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19. A method of coating a stent, comprising:

positioning a nozzle assembly having a first tube to deliver a polymer composition to a stent, a second tube disposed over the first tube to dispose a solvent free from drugs or polymer, and a third tube disposed over the second tube to atomize by air the composition and solvent that is applied to the stent.;

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discharging the polymer composition and the solvent from the nozzle assembly onto a stent so that the dispensed polymer composition and solvent mix when exiting the nozzle assembly; and

atomizing the solvent and polymer composition into droplets as the solvent and polymer composition are discharged out from the nozzle assembly by expelling air from the third tube in the nozzle assembly.

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20. The method of claim 19, wherein the solvent and polymer composition are discharged at different rates.

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